User Manual

Courseware Solutions Inc.

www.mathville.com

Mathville™ Speedway

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Getting started

Insert the CD-ROM into the CD-ROM drive.

Windows 3.x

a) Using the File Manager, click the CD-ROM drive icon.

b) Double-click *speed3.exe* to start.

Windows 95

a) Choose *My Computer*.

b) Choose the CD-ROM drive icon.

c) Double-click the *Speedway* icon to start.

Macintosh

a) Double-click the *Speedway CD* icon to show the contents of the CD-ROM.

b) Double-click the *Speedway - Power Mac* or *Speedway - Mac* icon to start.

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Overview

Mathville Speedway is part of the *Mathville*™ series of educational software, which is based upon the belief that EVERY student can enjoy developing and demonstrating their mathematical literacy within a supportive, mathematically rich environment.

The *Mathville* series is used in thousands of schools and is recommended by many departments and boards of education. The programs are designed in accordance with the standards developed by the National Council of Teachers of Mathematics and adhere to the curriculum guidelines of many North American educational jurisdictions.

Structure & content

Speedway is an exciting and fast-paced environment where children can discover a wide variety of highly motivating math activities. It is a non-linear, non-hierarchical program, and children are free to start or leave any of the activities at any time. Each of the sixteen activities requires the student to use specific math and problem-solving skills. The skills required are listed in the table on pages 4 and 5. The educational objectives associated with each activity are described beginning on page 8.

Suggested grade range

The topics in *Speedway* are often introduced in grade 3 classrooms. Due to its structure, which allows children to freely explore a wide variety of activities and math skills, the program may be used in grades 2 to 4 and may be enjoyed by older children as well.

Recommendations for use

Most children readily begin exploring *Speedway* on their own, require little supervision and enjoy playing for a full class period or more. The pro-

gram is designed to be used independently by students and does not require close adult supervision. Careful observation of a student's interactions with the program can reveal a great deal to the teacher about a student's problem-solving abilities, understanding of concepts and ability to apply skills in new situations.

Speedway may be used as:

- a highly motivating way to reinforce and provide additional practice in math skills introduced in class
- a means of providing a wider variety of applications of math skills and concepts
- a source of assessment information about a student's problem-solving methods and styles and a diagnostic tool to determine areas of difficulty
- an enrichment activity for children who excel in math

Having pairs of students use the program works well, creating a setting which encourages the development of communication skills and co-operative problem solving.

Tracking student progress

Each *Speedway* activity includes an optional printable record of achievement. These certificates provide a "paper track" of individual student progress and are also excellent additions to a student's math portfolio. Records of achievement printed out over time can be used to measure improvement and provide evidence that students have demonstrated the learning outcomes associated with each activity.

Electronic Manual

An electronic version of this manual is included on the CD-ROM for reference and as a backup. It may be printed in whole or in part. To use the electronic version, double-click its icon.

System Requirements

Speedway is a dual-platform multimedia CD-ROM program that runs on a Windows PC or a Macintosh with the following minimum requirements:

Multimedia PC

- 486 or Pentium
- 8 MB RAM
- Windows 3.x or 95
- SVGA 640 x 480, 256-color monitor
- CD-ROM drive
- Sound card
- Printer recommended

Macintosh

- System 7
- 8 MB RAM
- 640 x 480 color monitor
- CD-ROM drive
- Printer recommended

Copying to a hard drive

Speedway was developed to run directly from the CD-ROM. However, if you wish to copy it to a hard drive and run it, the following files and folders, which require about 20 MB, should be copied:

Windows 95

- *Speedway.exe*
- *DATA* folder

Windows 3.x

- *Speed3.exe*
- *DATA* folder/directory

Macintosh

- *Speedway - Power Mac* or *Speedway - Mac*
- *Data* folder

Curriculum Connections

Number Sense & Numeration

Addition & subtraction . . . . . *Operation Ski*
. . . . . *Speed Race*
Divisibility . . . . . *Divisible Derby*
Division (number facts) . . . . . *Operation Ski*
Division (as sharing) . . . . . *Skyway Divide*
Fractions . . . . . *Fraction Railroad*
. . . . . *Pit Stop*
Mental math . . . . . *Operation Ski*
Multiplication . . . . . *Concentration Cars*
. . . . . *Multiply Rummy*
. . . . . *Operation Ski*
Number facts . . . . . *Concentration Cars*
. . . . . *Operation Ski*
Number lines . . . . . *Count by Cycling*
Number words . . . . . *Concentration Cars*
. . . . . *Number Rally*
Ordinal numbers . . . . . *Speed Race*
Place value . . . . . *Number Rally*
Skip counting . . . . . *Count by Cycling*
. . . . . *Divisible Derby*

Geometry & Spatial Sense

Attributes of two and three-dimensional shapes . . . . *Shapes Away*
Flips . . . . . *Relation Shapes*
Polygons (two-dimensional shapes) . . . . . *Auto Bingo*
. . . . . *Relation Shapes*
. . . . . *Shapes Away*

Three-dimensional shapes (prisms & pyramids) . . . . .*Shapes Away*
Transformation designs . . . . . .*Turn Tablet*
Turns . . . . . .*Divisible Derby*
. . . . . .*Turn Tablet*

Measurement

Length . . . . . .*Pit Stop*
Mass . . . . . .*Pit Stop*
Perimeter . . . . . .*Perimeter Race*
Temperature . . . . . .*Pit Stop*

Patterns & Relations

Identifying patterns with attribute changes . . . . . .*Relation Shapes*
Identifying patterns involving transformations . . . . . .*Relation Shapes*
Multiples in a hundreds chart . . . . . .*Divisible Derby*
Recognizing patterns in graphs & tables of values . . . .*Graph Race*

Data Management & Probability

Bar graphs . . . . . .*Graph Race*
Chance . . . . . .*Graph Race*
Predicting events . . . . . .*Graph Race*
Probability concepts & experiments . . . . . .*Graph Race*

Problem Solving

Throughout the program

Quick Tour

- To play a *Speedway* game, click one of the cars. For example, to play Auto Bingo, click on the yellow car with the Auto Bingo icon on it. Each game's icon is shown on the following pages.
- To return to this main screen, click the *Back to Speedway* button in each game.
- The Menu bar across the top of the screen has two entries: **File** and **Options**. Click the pull-down **File** menu to:
    - *Quit* – to exit from the program *Speedway*
    - *Print Screen* – this option is available at the end of each game to provide a printed record of achievement

Use the pull-down **Options** menu for:

- *Credits* – to see a list of the creators of *Speedway* along with telephone, fax, and e-mail information
- *Help* – to hear context-sensitive help on what to do
- *Sound* – to display the slider control that adjusts the sound volume. Click in the upper corner to close the display.

- Although starting the program is a straightforward process (see "Getting started" on the first page of this manual), teachers may wish to start the program and demonstrate the use of the pull-down menus. Since the program runs straight from the CD-ROM, there is no danger of causing accidental damage to the program or any other program on the computer.
- When done with the program click *Quit* and eject the CD-ROM. There is no need to "uninstall" since nothing is ever put on the hard drive.
- Students generally discover a lot about *Speedway* by following their natural inclinations to explore. Encourage children to answer their own "What do I do next?" or "How do I…"-type questions by using the "Help" option or looking at the screen and experimenting.
- Having pairs of students work together on the program works well, providing a setting for cooperative problem-solving. One way of doing this is to set up a computer running *Speedway* in a resource or math lab area.
- Asking students to explain and compare the strategies they used for games such as *Perimeter Race* or *Graph Race* provides an opportunity to assess both communication and problem-solving skills.
- If a printer is available, you may wish to show students how to use the pull-down **File** menu to choose *Print Screen* and ask them to save the printouts as a way of tracking their achievements in the program.
- Sample screens and more detailed descriptions of the math skills required by each game begin on the next page.

Auto Bingo

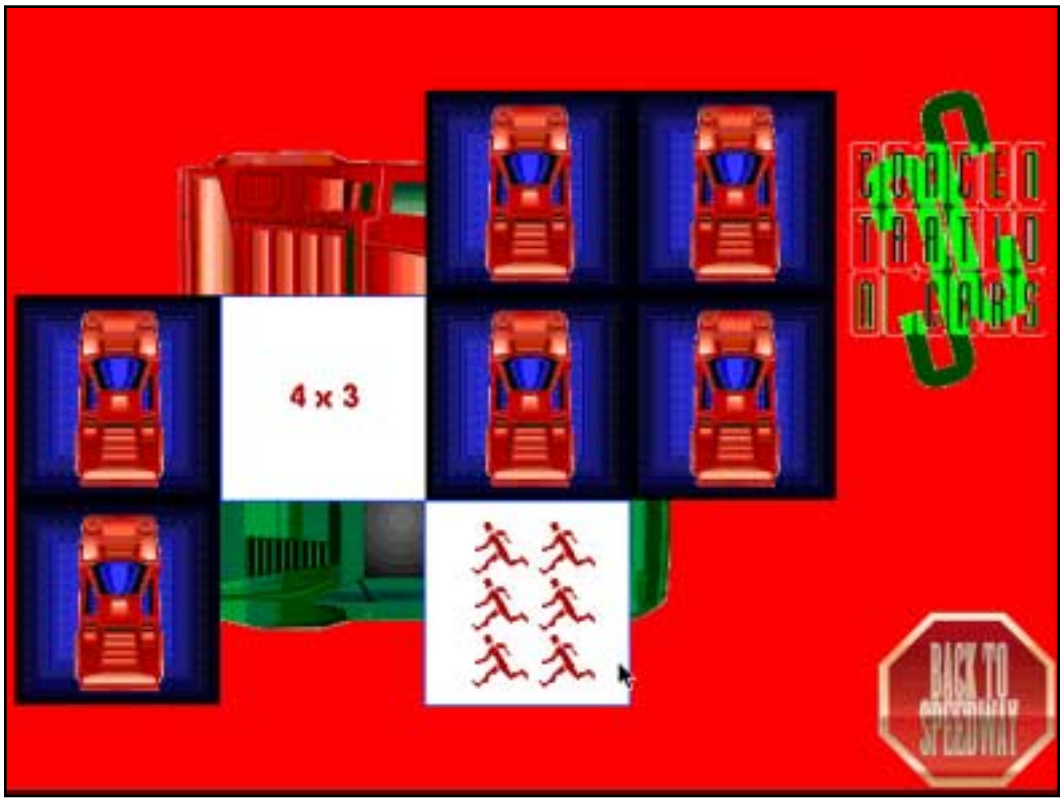
Program icon

Math skills

Compare and sort 2-dimensional shapes according to 2 attributes

Identify, sort and classify 2-dimensional shapes in the environment

Concentration Cars



Program icon

Math skills

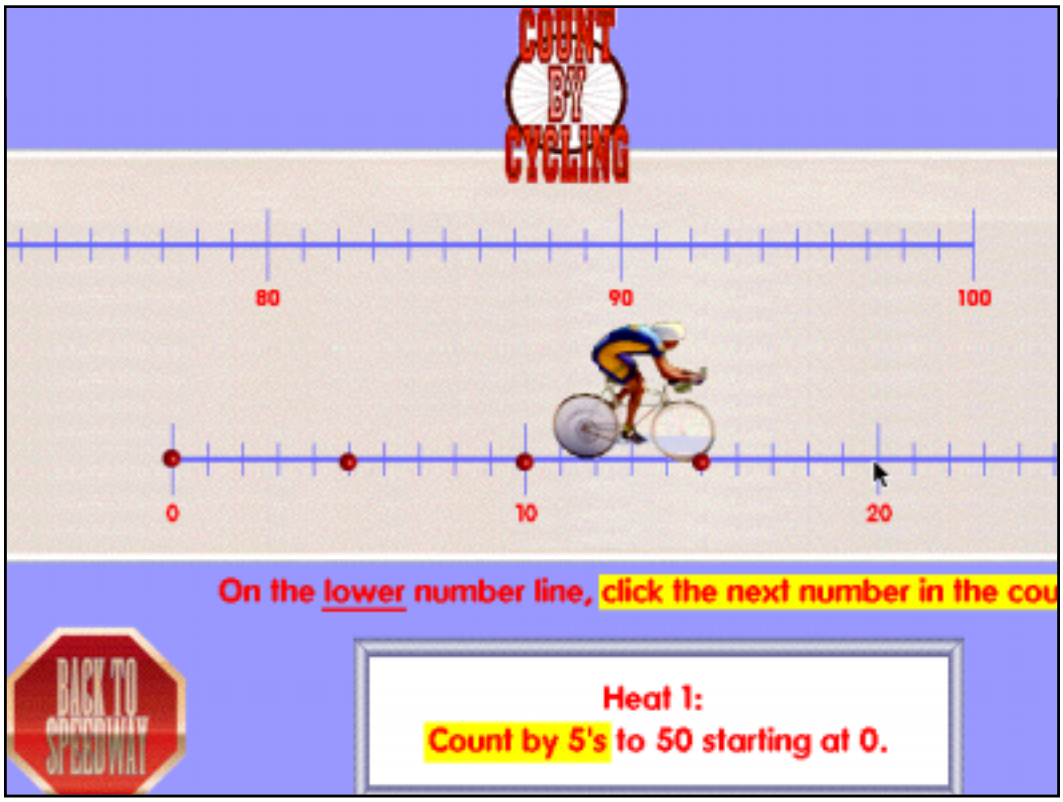
Demonstrate and recall multiplication facts to 7 x 7

Recognize multiplication as repeated addition

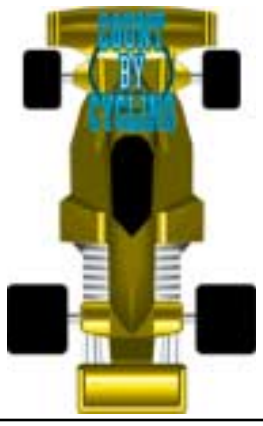
Represent multiplication using diagrams and manipulatives

Read number words to thirty

Count by Cycling



Program icon



Math skills

Count by 2's, 5's, 10's to 100 using various starting points

Count backwards by 2's, 5's, 10's from 100 using multiples of 2, 5 or 10 as starting points

Locate whole numbers to 100 on a number line and partial number line

Show counting by 2's, 5's, 10's to 100 on a number line

Divisible Derby

DIVISIBLE DERBY
6
2
BACK TO SPEEDWAY
To turn the car, click $\frac{1}{4}$, $\frac{1}{2}$ or $\frac{3}{4}$ on this wheel.
$\frac{1}{4}$ turn
$\frac{1}{2}$ turn
$\frac{3}{4}$ turn
Turn the car to touch EVERY number that is DIVISIBLE by (the numbers you say when you count by 2's).

Program icon

Math skills

Perform rotations using concrete materials

Identify numbers that are divisible by 2, 5 or 10

Explore multiples in a hundreds chart

Fraction Railroad

File Options
There are five railway cars.
Paint 1/5 (one fifth) of them yellow.
BACK TO SPEEDWAY
Click when you're done.
Click a pump to paint the car beneath it.
TRIP 2

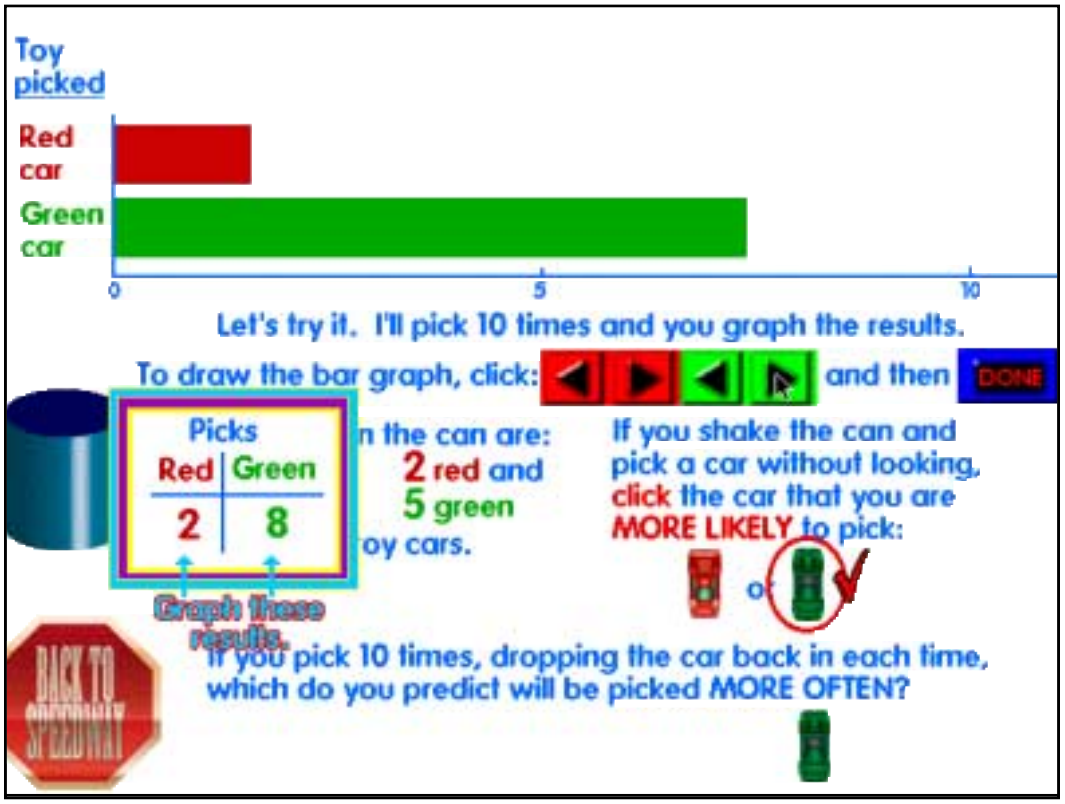
Program icon

Math skills

Represent fractions using concrete objects

Represent fractions as part of a set

Graph Race


Toy picked
Red car
Green car
0
5
10
Let's try it. I'll pick 10 times and you graph the results.
To draw the bar graph, click:
and then
DONE
Picks
Red
Green
2
8
n the can are:
2 red and
5 green
oy cars.
Graph these results.
If you shake the can and pick a car without looking, click the car that you are MORE LIKELY to pick:
BACK TO
If you pick 10 times, dropping the car back in each time, which do you predict will be picked MORE OFTEN?

Program icon

Math skills

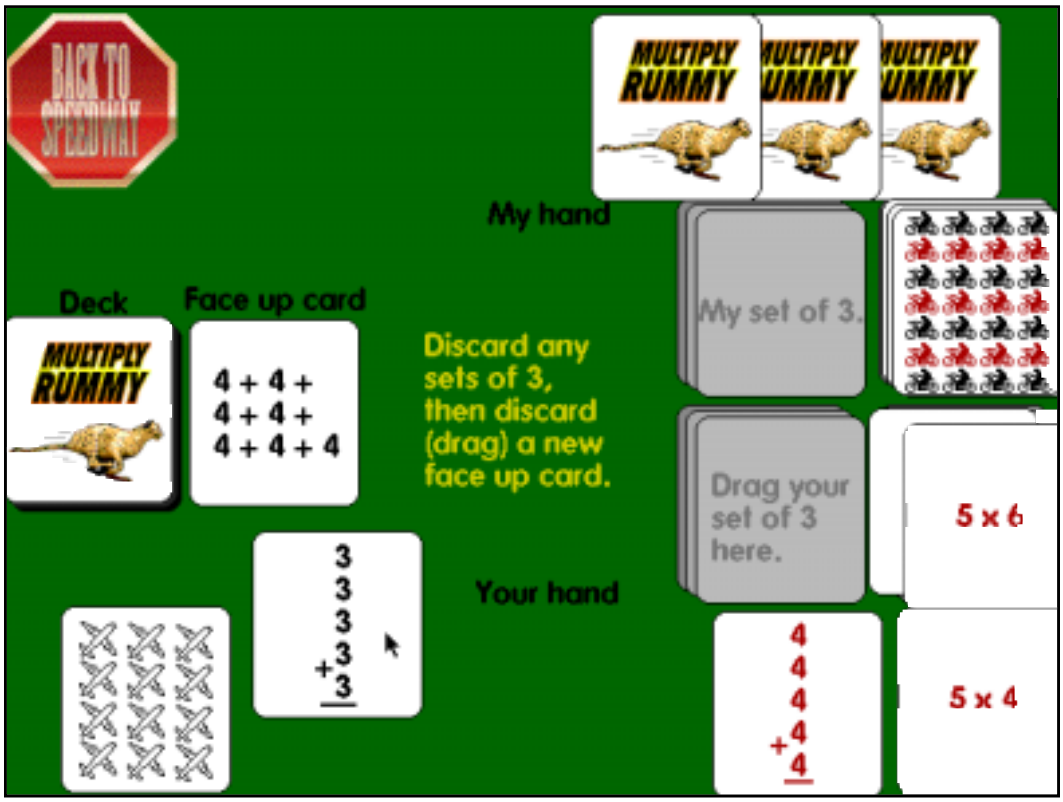
Construct bar graphs using scales with multiples of 5

Use mathematical language (e.g. more likely) to describe probability

Compare experimental results with predicted results

Predict the results of a simple probability experiment

Multiply Rummy



Program icon

Math skills

Recall multiplication facts to 7 x 7 using concrete materials

Represent multiplication as repeated addition

Use diagrams to represent multiplication

Number Rally

Program icon

Math skills

Read and write numerals and number words to 100

Demonstrate knowledge of place value (units and tens)

Operation Ski

Program icon

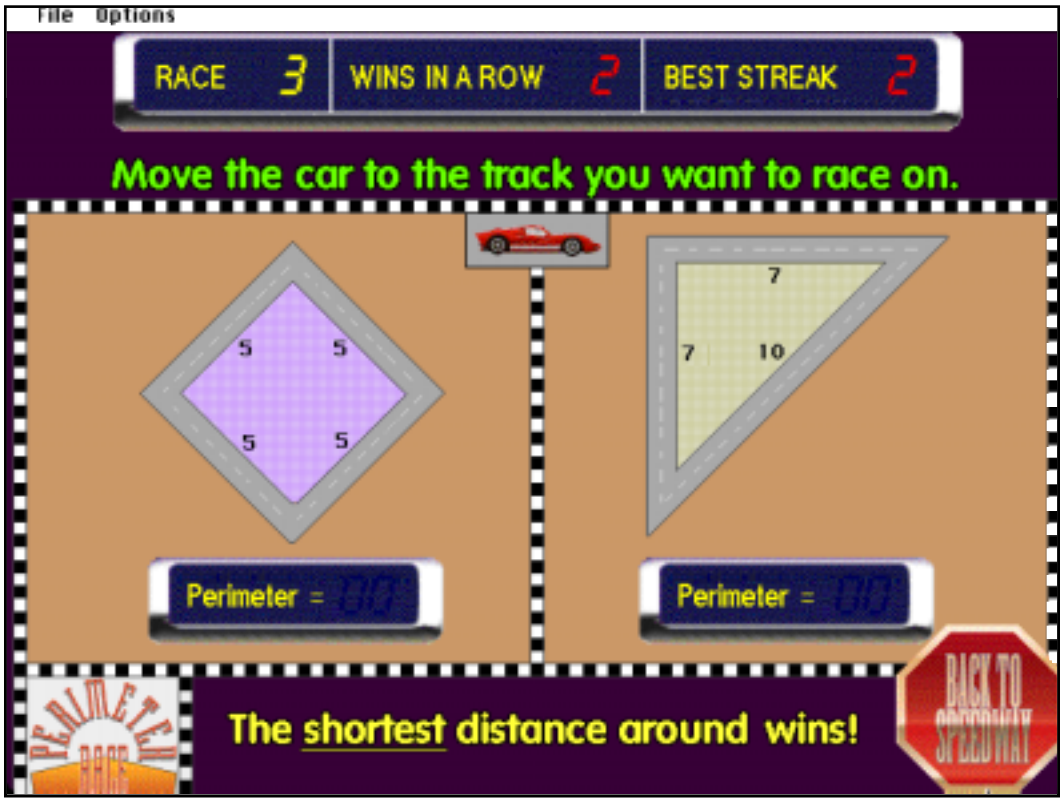
Math skills

Recall addition and subtraction facts to 18

Recall multiplication facts to 7 x 7

Recall division facts to 49 ÷ 7

Perimeter Race



Program icon

Math skills

Measure and compare perimeters of 2-dimensional shapes

Pit Stop

Find the container that weighs the most.
Put it next to the scale.
Show the engine's temperature. It's 35°.
OK
Fill the gas tank one quarter full.
OK
Click the tool that is between 4 cm and 5 cm long.

Program icon

Math skills

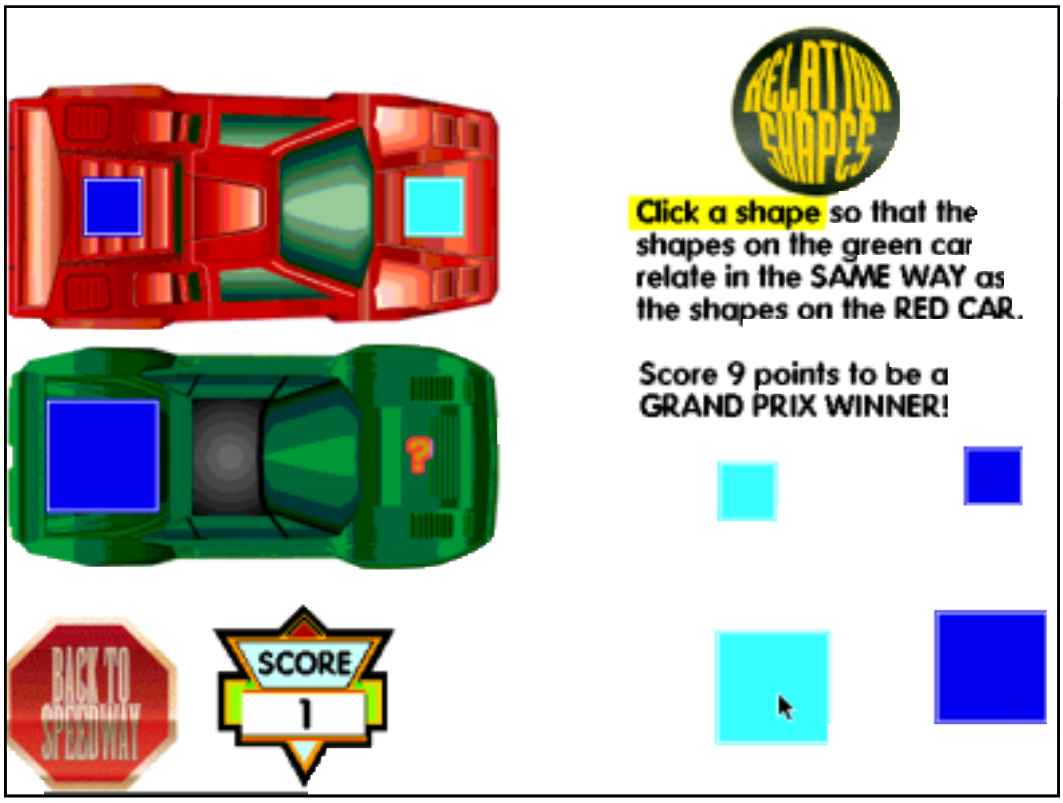
Measure and compare the mass of objects using standard units

Read and record temperature in °C

Represent common fractions as part of a whole using concrete representation

Estimate and measure linear dimensions of objects using standard units

Relation Shapes


RELATION SHAPES
Click a shape so that the shapes on the green car relate in the SAME WAY as the shapes on the RED CAR.
Score 9 points to be a GRAND PRIX WINNER!
BACK TO SPEEDWAY
SCORE
1

Program icon

Math skills

Compare and sort 2-dimensional shapes according to two attributes

Identify transformations such as flips

Identify patterns in which at least two attributes change

Understand patterns involving transformations such as flips

Shapes Away

Program icon

Math skills

Compare and sort 2-dimensional shapes according to two attributes

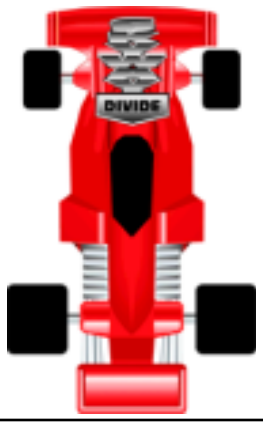
Compare and sort 3-dimensional shapes according to two attributes

Compare and sort 2-dimensional shapes according to number of sides and vertices

Identify 3-dimensional figures such as prisms and pyramids

Skyway Divide

Program icon



Math skills

Use manipulatives to demonstrate the process of division

Demonstrate division as sharing

Speed Race

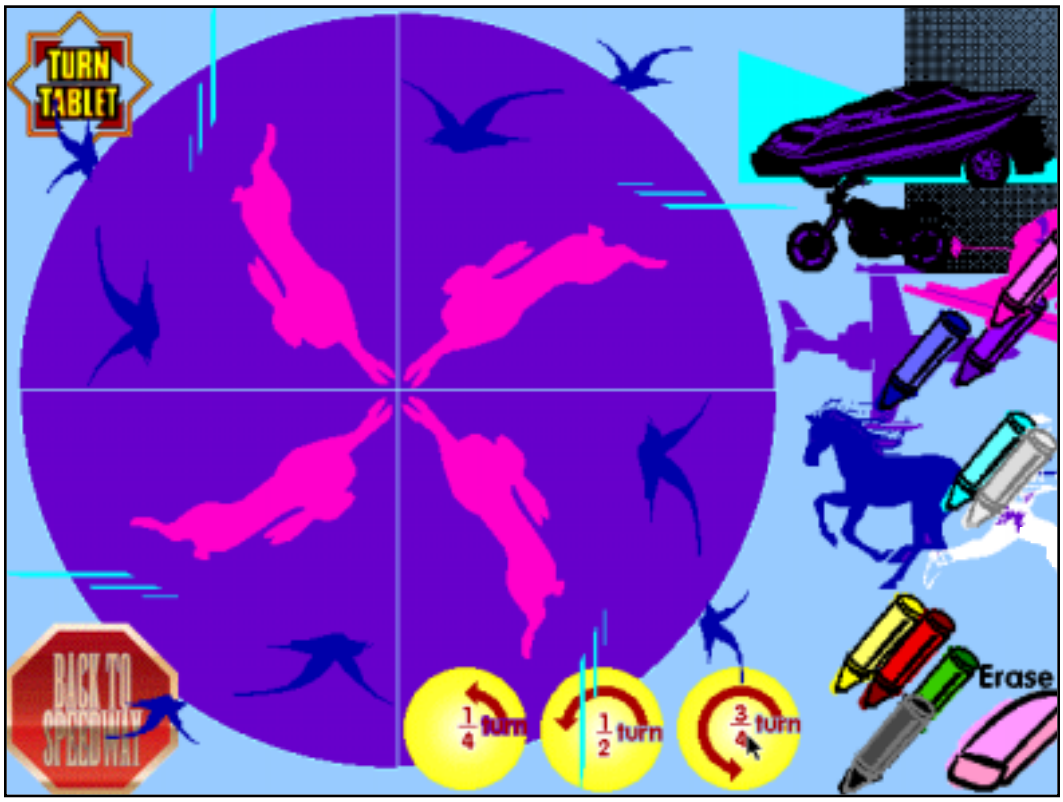
Program icon

Math skills

Add and subtract up to three digit numbers with and without carrying or borrowing

Read and understand ordinal numbers to 10

Turn Tablet



Program icon

Math skills

Create designs using turns

Perform rotations using concrete materials

Troubleshooting – Macintosh

Problem	*Possible Cause*	*Possible Solution*
PERFORMANCE		
Nothing happens	• wrong *Speedway* program	• For Power Macs, double-click *Speedway - Power Mac* For all other Macs, double-click *Speedway - Mac*
Program seems slow Program freezes	• not enough memory (at least 8 MB is required) • memory management confusion	• Don't run other programs while running *Speedway* • Turn OFF background printing • Close all windows in the Finder • Through the Control Panel (Memory), turn OFF modern memory or 32-bit addressing
PRINTING		
Page doesn't print	• printer driver not installed or active • printer not properly connected • printer not selected under *Chooser*	• Refer to your printer and computer manuals
Printing is slow	• slow processor	• Don't use *Speedway* while the printing is processing

Troubleshooting – Windows

Problem	*Possible Cause*	*Possible Solution*
PERFORMANCE		
Nothing happens	• wrong *Speedway* program	• For Windows 3.x, double-click *Speed3.exe* For Windows 95 or higher, double-click the *Speedway* icon
Program seems slow Program freezes	• not enough memory (at least 8 MB is required)	• Don't run other programs while running *Speedway*
General Protection Fault error	• memory management error	• Exit Windows and restart the computer • Run SCANDISK to detect and fix any memory location errors
Display is acting odd (fading, etc.) Some text on the screen seems too large	• monitor display may be set incorrectly	• Through Windows Setup, set your display to Super VGA 640 x 480 256 colors • Choose small fonts instead of large fonts in display set up
PRINTING		
Page doesn't print	• printer driver not installed or active • printer not properly connected • printer not selected under Print Manager	• Refer to your printer and Windows manuals
Printing is slow	• slow processor	• Don't use *Speedway* while the printing is processing